

REMARKS

By this amendment, claims 1, 3-4, and 39 have been amended. Nonelected claims 15-38 have been canceled to further prosecution without prejudice or disclaimer. New claims 43-46 have been added. Claims 1-14 and 39-46 are pending in the application. Applicants reserve the right to pursue the original claims and other claims in this and other applications.

On January 12, 2010, Applicants' representative conducted a telephonic interview with the Examiner. The following amendment and remarks substantially address the issues discussed in the interview. The claims were discussed in relationship to the prior art rejections. Agreement with respect to the claims was not reached.

Claims 1-6, 13, and 39 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Brockway et al. (US 2002/0138009). This rejection is respectfully traversed.

Claim 1 recites a method comprising, *inter alia*, “supplying a conduction current from a first transmitting electrode having higher electric potential to the inside of the human body to flow the current through the surface of the human body back into the inside of the human body and sinking the current to a second transmitting electrode having lower electric potential” (emphasis added). Claims 3 and 39 recite similar features. Applicants respectfully submit that Brockway et al. does not disclose at least these features.

To the contrary, Brockway et al. discloses a wireless communication method “intracorporeal conductive communication” (also referred to as “near field intrabody communication” or a “personal area network”). This wireless communication uses a living organism as a conductor, as in the presently claimed invention. However in the present invention, the current flowing through the living organism(human body) is “condition current” whilst Brockway et al. discloses the use of “a displacement current.” *See* Brockway et al., ¶ [0053], ln. 53. Applicants respectfully submit that Brockway et al. does not disclose, teach, or suggest at least a “conduction current,” as recited in claims 1, 3, and 39.

The term conduction current denotes a current by the movement of free electrons in a conductor. However the term “displacement current” does not refer to a real current (i.e., movement of electrons). This quantity is found to be proportional to the time derivative of the electric field and has an associated magnetic field. The present day concept of displacement current therefore simply refers to the fact that change in electric field has an associated magnetic field. Accordingly, it is clear that the communication according to Brockway et al. applies a different fundamental principle of physics than the communication according to the present invention. One electrode is attached on the surface of the human body and the other electrode acts as an antenna in intracorporeal conductive communication. Accordingly, only when the ground acts as an earth can the signal be transmitted.

Since Brockway et al. does not disclose all of the features of claims 1, 3, and 39, claims 1, 3, and 39 are not anticipated by Brockway et al. Claims 2, 4-5, and 13 depend, respectively, from independent claims 1 and 3, and are patentable at least for the reasons mentioned above, and on their own merits.

For example, claim 40 recites that the capsule type endoscope makes a current flow from one transmitting electrode to the other transmitting electrode when a signal to be transmitted is a digital signal “1” and makes a current flow from the other transmitting electrode to one transmitting electrode when a signal to be transmitted is a digital signal “0.” To the contrary, Brockway et al. discloses that the signals are analog signals, and are only converted to digital signals then “[c]ommunication circuit 310 wirelessly transmits pressure information from device 105 to remote receiver 140.” Paragraph [0049]. The internal signals of Brockway et al. are not digital signals.

Applicants respectfully request that the 35 U.S.C. § 102(b) rejection of claims 1-6, 13, and 39 be withdrawn and the claims allowed.

Claims 1-3, 5, 13, and 39-40 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Gersheneld et al. (US 5,914,701). This rejection is respectfully traversed.

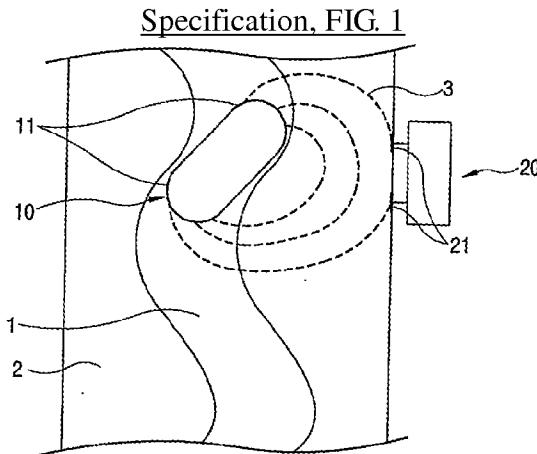
Claim 1 recites a method comprising, *inter alia*, “supplying a conduction current from a first transmitting electrode having higher electric potential to the inside of the human body to flow the current through the surface of the human body back into the inside of the human body and sinking the current to a second transmitting electrode having lower electric potential” (emphasis added). Claims 3 and 39 recite similar features. Applicants respectfully submit that Gersheneld et al. does not disclose at least these features.

To the contrary, Gersheneld et al. discloses that “transmitter 14 may modulate the signals by using, for example, direct-sequence spread spectrum modulation. This increases the system’s

immunity to noise. Also, it allows multiple transmitters, each using a different modulation code, to transmit information at the same time.... Alternatively, the modulation may instead be simply binary on/off modulation, and if multiple transmitters are used each transmits at a different frequency.” Col. 5, ln. 4-11. It is clear that Gersheneld et al. requires a modulation step to transmit a signal.

Furthermore, “[t]he current then flows through the receiver 22, that is, through a detector 47 and node 44, to ground through a coupling represented by a capacitance 48. The node 31 of the transmitter provides the return path for the current, as represented by a capacitance 34.” Col. 5, ln. 26-30. It is clear that Gersheneld et al. requires a grounding step to transmit a signal.

By contrast, the communication system according to the present invention involves an electrical circuit which resides entirely within and on the surface of the human body. Two transmitting electrodes are disposed at a sensor inside the human body. When different voltage are applied to each electrode, a current from one transmitting electrode having higher electric potential flows towards the other transmitting electrode having lower electric potential through a certain passage inside the human body (i.e., the dotted line indicated by reference number 3 in FIG 1 of the present specification, reproduced below). Applicants respectfully submit that Gersheneld et al. does not disclose, teach, or suggest at least “a conduction current,” as recited in claims 1, 3, and 39.



By contrast, in the system according to the present invention the electrical circuit exists entirely within the human body, with the receiving electrodes at the surface of the human body and the transmitting electrodes inside the human body. In the arrangement according to the present invention the receptor signal is small, but owing to the fact that the electrical circuit is enclosed within the human body less noise is generated than in the system according to Gersheneld et al. For example, DC signals can be generated without interference from the grounding state of the human body or atmospheric conditions.

The arrangement according to the present invention provides a particular advantage over Gersheneld et al. in that high speed transmission can be achieved. In the arrangement according to Gersheneld et al. a considerable amount of displacement current from the transmitting and receiving electrodes is absorbed into the ground, reducing transmission efficiency and preventing high speed transmission.

It is respectfully submitted that the method according to the present invention uses a significantly different data communication method, and provides significant advantages over the method according to Gersheneld et al.

Since Gersheneld et al. does not disclose all of the features of claims 1, 3, and 39, claims 1, 3, and 39 are not anticipated by Gersheneld et al. Claims 2, 5, 13, and 40 depend, respectively, from independent claims 1, 3, and 39, and are patentable at least for the reasons mentioned above, and on their own merits.

For example, claim 40 recites that the capsule type endoscope makes a current flow from one transmitting electrode to the other transmitting electrode when a signal to be transmitted is a digital signal “1” and makes a current flow from the other transmitting electrode to one transmitting electrode when a signal to be transmitted is a digital signal “0.” To the contrary, Gersheneld et al. discloses that the signals are analog signals, i.e., “signal generator 16 produces low frequency signals, preferably between 100 and 1000 kilohertz.” Col. 5, ln. 13-15. The signals of Gersheneld et al. are not digital signals.

Applicants respectfully request that the 35 U.S.C. § 102(b) rejection of claims 1-3, 5, 13, and 39-40 be withdrawn and the claims allowed.

Claims 7-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brockway et al. This rejection is respectfully traversed. Claims 7-10 depend, respectively, from independent claims 1 and 3, and are patentable at least for the reasons mentioned above, and on their own merits. Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of claims 7-10 be withdrawn and the claims allowed.

Claims 11-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brockway et al. in view of Bashiri et al. (US 6,165,178). This rejection is respectfully traversed. Claims 11-12 depend from independent claim 3 and are patentable at least for the reasons mentioned above, and on their own merits. Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of claims 11-12 be withdrawn and the claims allowed.

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Brockway et al. in view of Yoshioka et al. (US 5,651,869). This rejection is respectfully traversed. Claim 14 depends from independent claim 3 and is patentable at least for the reasons mentioned above, and on its own merits. Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of claim 14 be withdrawn and the claim allowed.

Claims 41-42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brockway et al. in view of Holmes et al. (US 4,267,415). This rejection is respectfully traversed. Claims 41-42 depend from independent claim 39 and are patentable at least for the reasons mentioned above, and on their own merits. Applicants respectfully request that the 35 U.S.C. § 103(a) rejection of claims 41-42 be withdrawn and the claims allowed.

New claims 43-46 depend from claim 1 and are patentable at least for the reasons least for the reasons mentioned above, and on their own merits. For example, claims 45-46 recite digital signals.

Claims 1, 3-4, and 39 have been further amended to correct grammatical and typographical errors unrelated to any rejection in the Office Action, and should not require further consideration or search.

It is respectfully submitted that a full and complete response has been made to the outstanding Office Action and, as such, there being no other objections or rejections, this application is in condition for allowance, and a notice to this effect is earnestly solicited. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided below.

Respectfully submitted,

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